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AUTHOR Raetsch, Barbara
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ABSTRACT

Reading success is closely related to paradigmatic and syntagmatic language responses. It is believed that a child who makes paradigmatic associations communicates and thinks in the language of the teacher while a child who makes syntagmatic responses is hampered in the learning situation. To determine how good (normal) and poor (retarded) readers performed on a task that involved remembering contrived paradigmatic and syntagmatic language patterns, 90 subjects were selected and assigned to two treatment groups. The first treatment group was presented with five lists of ten words each consisting of five pairs of paradigmatic language patterns. The second treatment group was presented with five lists of ten words each consisting of five pairs of syntagmatic language patterns. After ten seconds of study time, subjects were asked to circle the words just studied on a test list. No significant difference between language patterns was found. From this it would seem that (1) it is not possible to apply generalizations about verbal language patterns and reading success to the same language patterns presented in printed form, and that (2) another kind of organization rather than paradigmatic or syntagmatic associations must be imposed to facilitate better remembering for poor readers. (HOD)

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SHORT-TERM MEMORY AND READING RELATED LANGUAGE PATTERNS

By

Barbara Raetsch
Assistant Professor

Clemson University

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SHORT-TERM MEMORY AND READING-RELATED LANGUAGE PATTERNS

This paper is an outgrowth of a study that focused on determining the relationship of short-term memory ability of normal and retarded children to the reading process. The instrument was designed to evaluate short-term memory performance on two different language patterns. These language patterns were either paradigmatic or syntagmatic. Since most successful readers (normal subjects) tend to give paradigmatic responses, and most unsuccessful readers (retarded subjects) tend to give syntagmatic responses, the instrument was designed to evaluate how well the good and poor readers remember these associations when presented in written form. The associations were presented in printed form to closer approximate the reading process.

Short-term memory can be defined as the ability of an individual to reproduce immediately after one presentation, a series of discrete stimuli; or as remembering material after periods of less than one minute. Presentation of material to be remembered is either at the rate of one item per second or at a natural rate of discharge, as in pronouncing a word.

Tradivional research on short-term memory included a list of digits to the remembered at increasing numbers and seconds. Often the subjects were evaluated in terms of how many trials were necessary to reach the criterion. In addition to digits, short-term memory studies have employed strings of consonants, geometric figures, or position of dots and/or pictures.

To summarize results of what is now known about short-term memory, eight conclusions follow:

1. Forgetting of unrelated items occurs very rapidly.
2. The more unrelated items are in a list, the more rapidly they are forgotten.
3. Both primacy and recency are observed.
4. Forgetting often involves partial rather than all-or-none loss of information.
5. With lists that lend themselves to organization, or when organization is imposed by teaching the subject some kind of encoding strategy, forgetting occurs at a much slower rate.
6. The absolute level of short-term memory capacity is positively correlated with age.
7. The short-term memory deficit found in very young and retarded children likely involves acquisition strategies.
8. One can intervene in the memory processes of children and, thereby, raise their level of performance.

Of these eight statements that summarize what is known about short-term memory, there are three that should encourage teachers of reading. Numbers 5, 7, and 8 indicate that memory deficits are caused by an inability to organize the information to be remembered and that it is possible to intervene in the memory processes and supply the necessary organization that will enhance memory.

The relationship of memory to the reading process is still vague. However, in his taxonomy of comprehension skill, Barrett includes recall or memory as one dimension of comprehension. "Recall requires the student to produce from memory

ideas and information explicitly stated in the selection". He has indicated five comprehension tasks that rely on recall: (1) recall of details; (2) recall of main ideas, (3) recall of sequence: (4) recall of cause-effect relationships; and (5) recall of character traits.

Goodman, in his Psycholinguistic Model of the reading process, gave a place to both long-term and short-term memory. He indicated that a reader's long-term memory contained the cues the reader has stored from previous readings of written material. And, a reader's short-term memory stores linguistic cues while the reader is engaged in reading a selection.

Spache's scheme of reading comprehension also gave memory an important place. Following is the scheme:

MEMORY
(retention of information)

WORD - recall of specific word meanings

SENTENCE - recall of thoughts of sentences - successive thoughts must be held in mind until the sentence is finished

INTERRELATIONSHIPS OF SENTENCES - remember main ideas until the end of of the paragraph

PARAGRAPHS - remember in order to summarize overall meaning

INTERRELATIONSHIPS OF PARAGRAPHS - recall meaning and add personal associations

PARAGRAPH INFERENCES - recall of author's implications

We need to consider what is known about memory and any correlations that might exist with and help explain the reading process as we know it. The reading process includes a myriad of definitions. Within these definitions one can usually find references to language, especially oral language, and the influence it exerts over the ability of one to read the printed word. Also, many pages in textbooks on the teaching of reading are devoted to the interrelationships of reading to the other language arts. It has been said that

reading is a process of recognizing that printed words represent spoken words and is a part of the total language spectrum. Language development begins in earliest infancy and becomes refined throughout one's life.

There are specific language patterns that correlate with reading ability. These language patterns are paradigmatic and syntagmatic word associations. These terms, paradigmatic and syntagmatic, classify two different sets of responses to oral language. Traditionally, subjects were presented stimulus words and told to say the first word that came to mind when presented with each stimulus words. The manner in which the subject responded was then analyzed as to whether he was responding paradimatically or syntagmatically.

Paradigmatic language responses are associated with convergent thinking and syntagmatic responses are associated with divergent thinking. Paradigmatic language patterns include words that are from the same form-class, have subordinate-superordinate relationships, or the words are synonyms or antonyms. Syntagmatic language patterns include words that depend on their sequence on order rather than upon being members of the same form-class. A syntagmatic relationship is one in which the two words could appear side by side in a sentence or in close proximity. The following two lists demonstrate identical stimulus words with response words that show either paradigmatic or syntagmatic relationships:

Paradigmatic		Syntagmatic
in	- stimulus -	in
out	- respons -	house
boy	- stimulus -	boy
man	- response -	goes
drop	- stimulus -	drop
fall	- response -	it
hot	- stimulus -	hot
cold	- response -	plate

It has been postulated that reading success is closely related to these language patterns. Language behaviors that influence a child's performance in reading skills that result in his producing paradigmatic or syntagmatic responses. It is believed by some that a child who makes paradigmatic associations communicates and thinks in the language of the teacher while a child who makes syntagmatic responses is hampered in the learning situation.

It has been demonstrated that good readers tend to give paradigmatic responses and that poor readers and retarded children tend to give syntagmatic responses. Also important is that young children tend to give syntagmatic responses while an older child tends to give paradigmatic responses. This shift from syntagmatic associations to paradigmatic associations is believed to take place between the ages of 6 and 8.

Oral language functions such as speaking and listening are considered correlates of the language functions of reading and writing. Also, the way one responds to a stimulus word in a free association task is connected with how well one performs in the reading process. In addition, it seems that if memory of language could be enhanced, then more learning of language would take place. Given these three ideas the following question became important:

> How would good (normal) and poor (EMR) readers perform on a task that involved remembering contrived paradigmatic and syntagmatic language patterns?

It is necessary at this point to explain what is meant by "contrived" paradigmatic and syntagmatic language patterns. The "contrived" patterns are a contrast to the free association patterns where subjects were presented a stimulus word and responded with the first word that came to mind. The "contrived" patterns employed to answer the above question consisted of presenting both the stimulus word and the response word to the subject. The re-

sulting pairs of words represented either the paradigmatic or the syntagmatic category. Another difference to the free association task, which is oral, was the fact that these word pairs were presented in a printed, visual mode. The pairs were in serial order but with no clue to indicate the paired relationship. For example:

Paradigmatic	Syntagmatic
dark	dark
light	night
once	once
twice	again
on	on
off	ball
his	his
him	toy
mother	mother
father	cook

In order to answer the question posed above, 90 subjects were selected with 45 randomly assigned to the two treatment groups. Within each treatment group were three levels of subjects: (1) 15 EMR subjects with IQ's from 50-80 and reading levels two or more years below normal; (2) 15 normal IQ (90-110) subjects matched on MA (8.0 - 11.0) to the EMR's and reading levels appropriate for their chronological age; (3) 15 normal IQ (90-110) subjects matched on CA (11.0 - 16.9) to the EMR's and reading levels appropriate for their chronological age.

Treatment Group I was presented with five lists of 10 words each that consisted of five pairs of paradigmatic language patterns. Treatment Group II was presented with five lists of 10 words each that consisted of five pairs of

syntagmatic language patterns. These lists were considered the Study Lists. The subjects were instructed to point to each word in the Study List with his finger as the examiner pronounced the words. It was not brought to the subject's attention that there were ten words to be remembered or that word pairs of any kind existed in the list. The subjects were given ten seconds of study time and then were instructed to turn to the appropriate TestList and circle the words they had just studied. The Test Lists consisted of the original ten words plus fifteen distractor words arranged in random order.

Data were analyzed by a 2 x 3 analysis of variance. Mean separations through the use of the t-test were obtained within the treatments.

It was found that whether the language pattern presented was paradigmatic or syntagmatic made no significant difference. However, mean separation showed that paradigmatic associations were remembered slightly better overall. The performance of the three levels of subjects on remembering words regardless of treatment was significantly different. Both groups of normal subjects remembered significantly more words in each Treatment Group than the retarded subjects. There was no significant difference in words remembered between the MA matched group and the CA matched group.

In looking at the performance of each of the three levels of subjects, it was expected that the good readers (normal subjects) would remember significantly more paradigmatic associations. As expected, the younger normals (MA equals) remembered more paradigmatic language patterns but not significantly more. However, the older normals (CA equals) remembered slightly more syntagmatic associations. It was expected that the retardates would remember more syntagmatic language patterns. The mean scores indicated that they remembered slightly more paradigmatic language patterns.

Given what was already known about good readers giving paradigmatic responses and poor readers giving syntagmatic responses, it was expected that the results, with the language patterns arranged in written pairs to approximate the reading

process, would follow the same directions. Since the expected results were not confirmed, the major implication is that it is not possible to apply generalizations about verbal language patterns and reading success to the same language patterns presented in printed form. Secondly, although it is known that imposed organization can facilitate memory; another kind of organization rather than paradigmatic or syntagmatic associations must be imposed to facilitate better remembering for poor readers.